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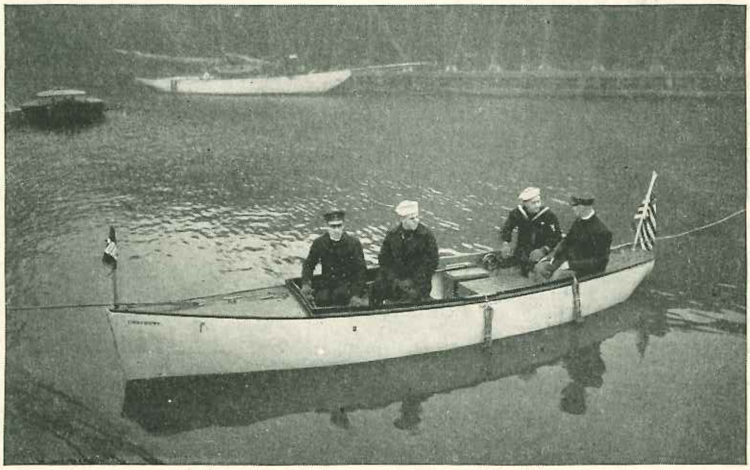
The Motor Boat, Concrete

Presented to the U. S. Naval
Reserve, Chicago, October
21, 1917, by the Builder and
Owner, Walter N. Dowsey,
Iron River, Mich.

Exhibited at the National Motor Boat Show, New York, January 19-26, Inclusive



The U. S. Naval Reserve Motor Boat, Concrete

Concrete for Permanence

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U. S. Naval Reserve Motor Boat, Concrete

WHEN the call came last summer for ships, and more ships, those charged with the responsibility of supplying them realized that the commonly used shipbuilding materials and labor were not available in sufficient quantity to meet the urgent needs of the hour.

Few had then thought of concrete as an aid in solving our shipping problems. But a little investigation disclosed the fact that concrete for boats and barges was not by any means a novelty. It was then that there came to light here and there in various parts of this country and abroad, many successful ventures with concrete boats, barges, lighters and other floating structures. Among such disclosures was the fact that the first use of what today would be called reinforced concrete was in building a rowboat at Carces, France, in 1849.

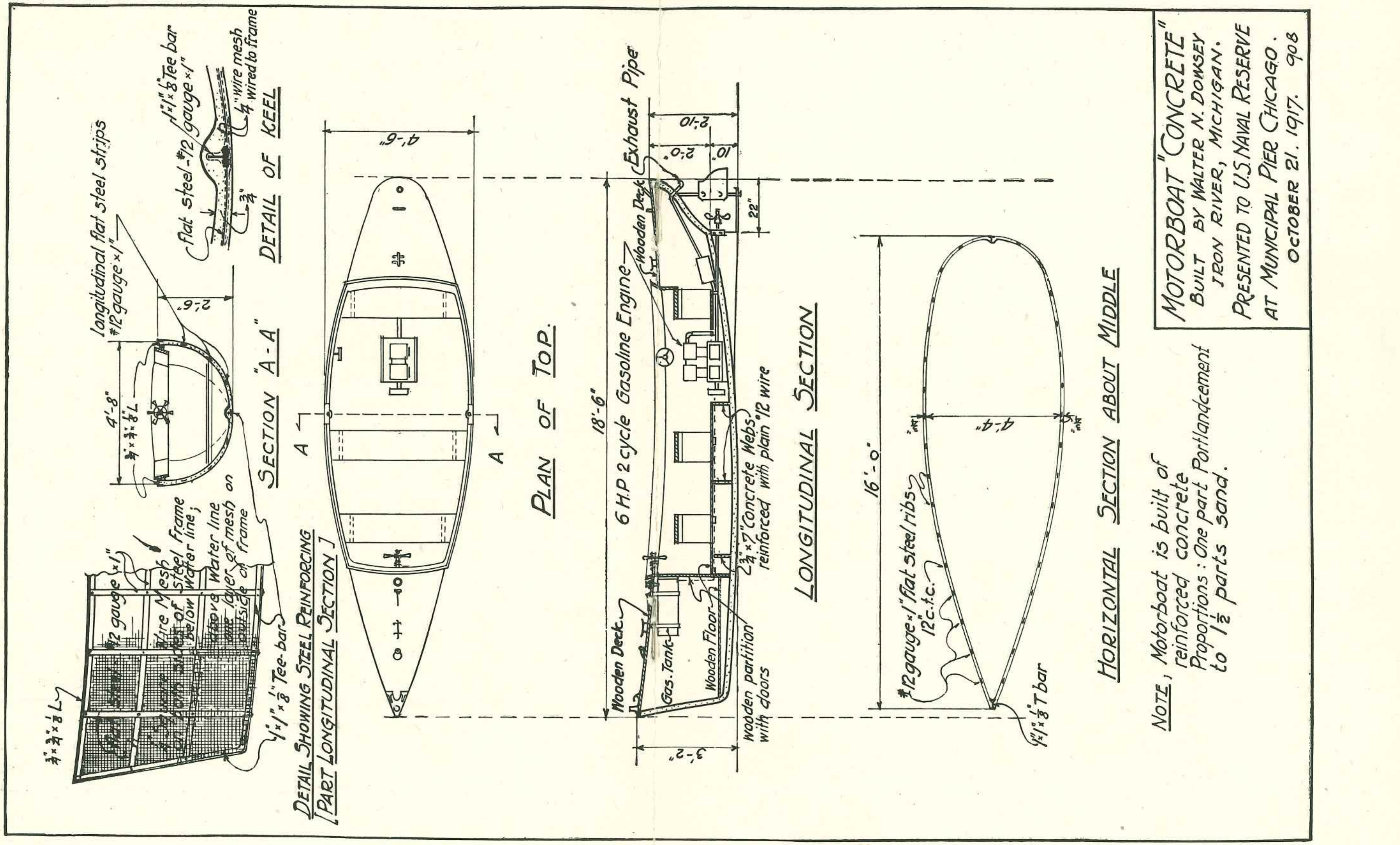
Various persons hitherto unheard of then began to tell what they had done with concrete in building boats. Among these was Walter N. Dowsey, of Iron River, Mich. Mr. Dowsey's first experiment with concrete in boat building was made in 1911.

The motor boat, Concrete, with Walter N. Dowsey at the helm before he presented his boat to the U. S. Naval Reserve

His second attempt, which was made in 1914, resulted in such success that his pioneer efforts in concrete boat building have become common knowledge, because in October, 1917, he presented his second concrete boat to the U. S. Naval Reserve, Chicago. So national is the interest being taken in the subject of concrete for ships that the Naval Reserve has loaned the boat presented to it by Mr. Dowsey, for exhibition at the National Motor Boat Show, New York, January 19-26, inclusive.

The *Great Lakes Recruit* (Great Lakes, Ill.), December, 1917, contained the following:

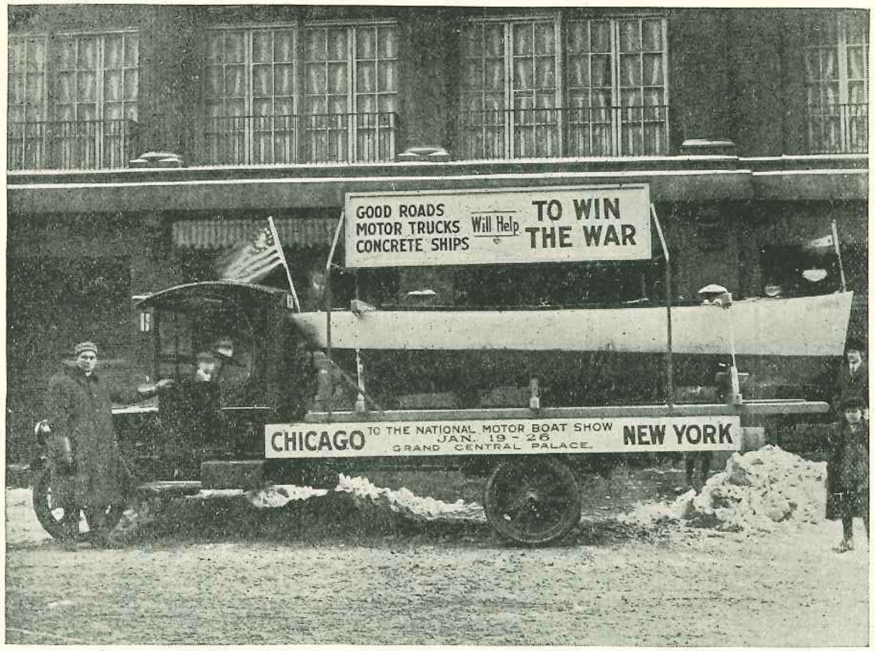
> A new addition to the equipment of the Great Lakes Naval Reserve Force Auxiliary was received in a reinforced concrete motor boat, the only one of its kind on the Great Lakes. It was officially presented to the Naval Reserve by Walter N. Dowsey, the owner and builder of the boat.
>
> Because of the present keen interest in all forms of boat construction, there has been considerable discussion as to the value of reinforced concrete for vessels of all kinds. Recently a large boat was floated at Norway, while reinforced concrete vessels are now being built at Montreal, San Francisco and Seattle. Boat builders in Chicago had their first opportunity of examining a concrete boat when Mr. Dowsey brought his motor boat down from Iron River, Michigan, where he built it three years ago, long before the United States had any intention of building ships on a large scale. The first boat of reinforced concrete built by Mr. Dowsey was completed in 1911, but as he was not familiar with boat construction he quickly learned that he had not provided accurately to get the proper draft. The 1914 boat was a definite success and has been in constant use ever since.
>
> Many of Mr. Dowsey's friends ridiculed his efforts to make a boat out of concrete, stating that he had as much chance of making it float as he had of making a stone float. The builder was not daunted and the boat presented to the Great Lakes Naval Reserve is an indication of Mr. Dowsey's faith in concrete.
>
> It was built up with a T-bar laid for the keel, the end of which was turned upward and used for prow post. Flat steel 12 gauge by 1 inch was riveted to the keel as ribs on 12-inch centers. Some flat steel strips, 12-inch centers, were then riveted to the ribs extending lengthwise from prow to stern. Upon this light frame work of flat steel strips in 12-inch strips, ¼-inch square wire mesh was attached by wire, covering the entire hull one thickness, and below water line and on the bottom two thicknesses were used.
>
> The concrete was applied with a trowel and in order to complete the work the owner worked until midnight. In the morning he discovered that the cement had dried too rapidly and showed some hair cracks. The hair cracks have received no


MOTORBOAT "CONCRETE"
BUILT BY WALTER N. DOWSEY
IRON RIVER, MICHIGAN.
PRESENTED TO U.S. NAVAL RESERVE
AT MUNICIPAL PIER CHICAGO.
OCTOBER 21. 1917. 908
longitudinal flat steel strips #12 gauge×1"
2'6"
4'-8"
3/4"×3/4"×1/8" L
SECTION "A-A"
flat steel-#12 gauge×1"
1"×1"×1/8" Tee bar
1/4" wire mesh wired to frame
3/4"
DETAIL OF KEEL
4'-6"
A
A
PLAN OF TOP.
Exhaust Pipe
2'-10
2'-0"
10"
22"
Wooden Deck
6 H.P 2 cycle Gasoline Engine
18'-6"
2 3/4"×7" Concrete Webs reinforced with plain #12 wire
LONGITUDINAL SECTION
Wooden Deck
Gas. Tank
Wooden Floor
wooden partition with doors
3'-2"
16'-0"
4'-4"
#12 gauge×1" flat steel ribs 12" c.t.c.
1"×1"×1/8" T bar
HORIZONTAL SECTION ABOUT MIDDLE
NOTE, Motorboat is built of reinforced concrete Proportions: One part Portlandcement to 1 1/2 parts sand.
3/4"×3/4"×1/8" L
#12 gauge×1"
1/4" square Wire Mesh on both sides of steel frame below water line; above water line one layer of mesh on outside of frame
1"×1"×1/8" Tee-bar
DETAIL SHOWING STEEL REINFORCING [PART LONGITUDINAL SECTION]

Some Details of the Motor Boat Concrete, U. S. Naval Reserve attention to date and have caused no trouble. No effort was made to trowel the outer surface of the hull smooth and as a result she is not a real speedy boat, though she easily makes 10 miles an hour. The concrete was allowed to harden under cover and was sprinkled during the hardening.

Before reaching the Municipal Pier, the boat was closely examined by members of the South Shore Country Club and the Jackson Park Yacht Club at their respective piers on Saturday. The boat had been brought down by freight from Iron River and was fitted up at the Kraft Shipbuilding Yard, South Chicago, to conform with the motor boat laws of the Great Lakes.

Like so many pioneers in various fields of construction, Mr. Dowsey's efforts were not at first appreciated. As he puts it in homely English of the hardy trapper and woodsman that he is: "My first thought of concrete boat building came from an argument. I claimed that it was possible to make anything float on condition that enough air space was allowed on the inside. I then went ahead to prove that a concrete boat could be made. The boat was constructed during odd moments and I had a great many visitors at Iron River, Michigan. Some of them claimed that I was crazy and pointed out that the way to prove whether or not a concrete boat could float was to throw a stone in the water and see what would happen. When my boat was put in the water in 1914, my friends were greatly surprised when my boat not only floated, but was also able to make 10 miles an hour with the engine in good working order. I have been using the boat constantly since 1914, and am very glad to present the boat to the Naval Reserve for whatever purpose they desire."



Start of the U. S. Naval Reserve motor boat, Concrete, from Chicago, en route to the National Motor Boat Show, January 19-26, New York. This picture was taken in front of the club rooms of the Chicago Automobile Club, where luncheon was tendered to commemorate this occasion, January 2, 1918

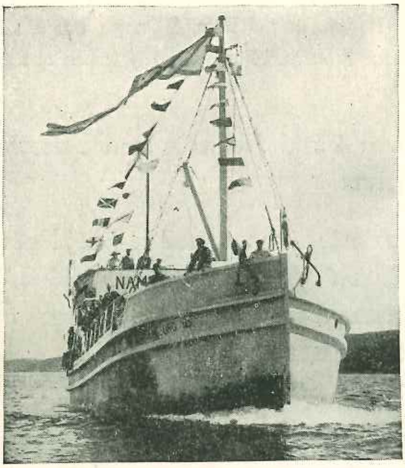
The boat is 18 feet 6 inches long; has a beam of 4 feet 6 inches; thickness of hull ¾-inch; depth of hull 38 inches; power, 6 horsepower motor. Portland cement and sand were used in proportions of one part of cement to 1½ parts of sand.

Jackies of the Naval Reserve at the Municipal Pier, Chicago, are much pleased with their new reinforced concrete motor boat and have already taken out many passengers on practice runs.

Sketches reproduced on pages 4 and 5 of this leaflet show various details of the motor boat, Concrete.

The Portland Cement Association has issued a booklet entitled, "*Concrete Ships, a Possible Solution of the Shipping Problem,*" which reviews the most noteworthy instances of the use of concrete in building boats and barges as well as citing late examples of such use and work in progress at the present time. A free copy of this booklet can be obtained on request by anyone interested.

THIS is a view of a 400-ton concrete motorship, built by Fougner's Steel Concrete Shipbuilding Co., Moss, Norway, during the summer of 1917.



It is now in ocean service between Norway and England. Similar but larger concrete boats are now being built by the same plant.

Lloyds Approval of Concrete Ships

Editorial from *International Marine Engineering*, November, 1917

Lloyds recent approval of plans for the construction of several reinforced concrete ships with a view to classification by the society means that the ferro-concrete, seagoing, self-propelled vessel has become—within certain limits of size—a practical proposition. Now that the basic principles upon which this form of shipbuilding rests have been fully accepted, the problem resolves itself into a question of how far such a design may be developed safely in its application to larger ships. The plans already approved by Lloyds cover a number of non-propelling barges, some of which are designed to carry as much as 500 tons deadweight, and a motor vessel for coastwise trade between Great Britain and Scandinavian countries. These vessels will be built in the United Kingdom and Norway under the inspection of Lloyds surveyors and plans for other similar vessels, but of larger carrying capacity, are now under consideration.

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